

**HIA FOR THE RICHARDS BAY POWERSHIP,  
RICHARDS BAY , KZN**

**FOR TRIPLO4 ENVIRONMENTAL SERVICES**

**DATE: 3 SEPTEMBER 2020**

**By Gavin Anderson**

**Umlando: Archaeological Surveys and Heritage  
Management**

**PO Box 102532, Meerensee, 3901**

**Phone:035-7531785      Cell: 0836585362**

**umlando@gmail.com**



## TABLE OF CONTENT

EXECUTIVE SUMMARY .....	4
INTRODUCTION .....	5
KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE, ACT 05, 2018 .....	10
METHOD .....	12
Defining significance.....	13
RESULTS .....	16
DESKTOP STUDY .....	16
PALAEONTOLOGICAL SENSITIVITY .....	23
FIELD SURVEY.....	24
RECOMMENDATIONS .....	24
CONCLUSION.....	24
REFERENCES .....	25
<b>EXPERIENCE OF THE HERITAGE CONSULTANT .....</b>	<b>26</b>
<b>DECLARATION OF INDEPENDENCE.....</b>	<b>26</b>

## TABLE OF FIGURES

FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENT .....	6
FIG. 2: AERIAL OVERVIEW OF THE PROPOSED DEVELOPMENT .....	7
FIG. 3: TOPOGRAPHICAL MAP OF THE PROPOSED DEVELOPMENT (2002) .....	8
VIEWS ALONG THE PROPOSED (TOP) & ALTERNATIVE LINE .....	9
TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES .....	15
FIG. 4: LOCATION OF KNOWN HERITAGE SITES IN THE GENERAL AREA .....	18
FIG. 5: LOCATION OF PROPOSED LINES IN 1937.....	19
FIG. 6: LOCATION OF PROPOSED LINES IN 1943.....	20
FIG. 7: LOCATION OF PROPOSED LINES IN 1964.....	21
FIG. 8: LOCATION OF PROPOSED LINES IN 1983.....	22
FIG. 9: PALAEONTOLOGICAL SENSITIVITY MAP .....	23

## Abbreviations

HP	Historical Period
IIA	Indeterminate Iron Age
LIA	Late Iron Age
EIA	Early Iron Age
ISA	Indeterminate Stone Age
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Late Stone Age
HIA	Heritage Impact Assessment
PIA	Palaeontological Impact Assessment

## **EXECUTIVE SUMMARY**

*The project entails the generation of electricity from a floating mobile Powership moored in the Port of Richards Bay. This includes three ships berthing during the project lifespan, Floating Storage Regasification Unit (FSRU), and two Powerships. A Liquefied Natural Gas Carrier (LNGC) carrier will supply Liquefied Natural Gas (LNG) to the FSRU on a short term basis (1-2 days). The natural gas will be pumped from the FSRU to the Powership via the development and operation of a subsea gas pipeline. A 3km transmission line from the ship will feed the substation, and national grid.*

*A desktop heritage survey was undertaken for the proposed Richards Bay powership line. There will be a ~3km 132kV transmission line from the Richards Bay Port to the Bayside substation. This in turn will supply to the national grid.*

*The study area is mostly in (drained) swamps with a few raised areas. These areas were used in the past as agricultural fields.*

*No heritage sites were noted during the survey.*

*While some of the area has moderately sensitive palaeontology, the individual poles will not be affecting the Cretaceous deposits.*

## **INTRODUCTION**

“The project entails the generation of electricity from a floating mobile Powership moored in the Port of Richards Bay. This includes three ships berthing during the project lifespan, Floating Storage Regasification Unit (FSRU), and two Powerships. A Liquefied Natural Gas Carrier (LNGC) carrier will supply Liquefied Natural Gas (LNG) to the FSRU on a short term basis (1-2 days). The natural gas will be pumped from the FSRU to the Powership via the development and operation of a subsea gas pipeline.

The proposed design capacity for the Richards Bay Powership is 554MW, which comprises of 27 gas engines having a heat output of 18.32 MW each. From the ship, electricity will be evacuated via a 132kV transmission line over a distance of approximately 3km, from the Richards Bay Port to the Bayside substation, to supply the national grid.

The fuel used by the Powership will be natural gas sourced from the FSRU via gas pipeline. The subsea gas pipeline connecting the FSRU to the Powership will be routed along the toe of the existing dredged slopes and will connect to the vessels via a flexible marine hose riser.

The proposed technology for the production of electricity through natural gas-fired reciprocating engines and steam engines will improve efficiency of energy generation. Construction is limited to transmission and gas supply lines as the ships are built internationally and arrive fully equipped in the port ready for operation” (Tripl4 BID 2020)

Umlando was requested to undertake a HIA of the proposed development. Figures 1 – 3 show the location of the development.

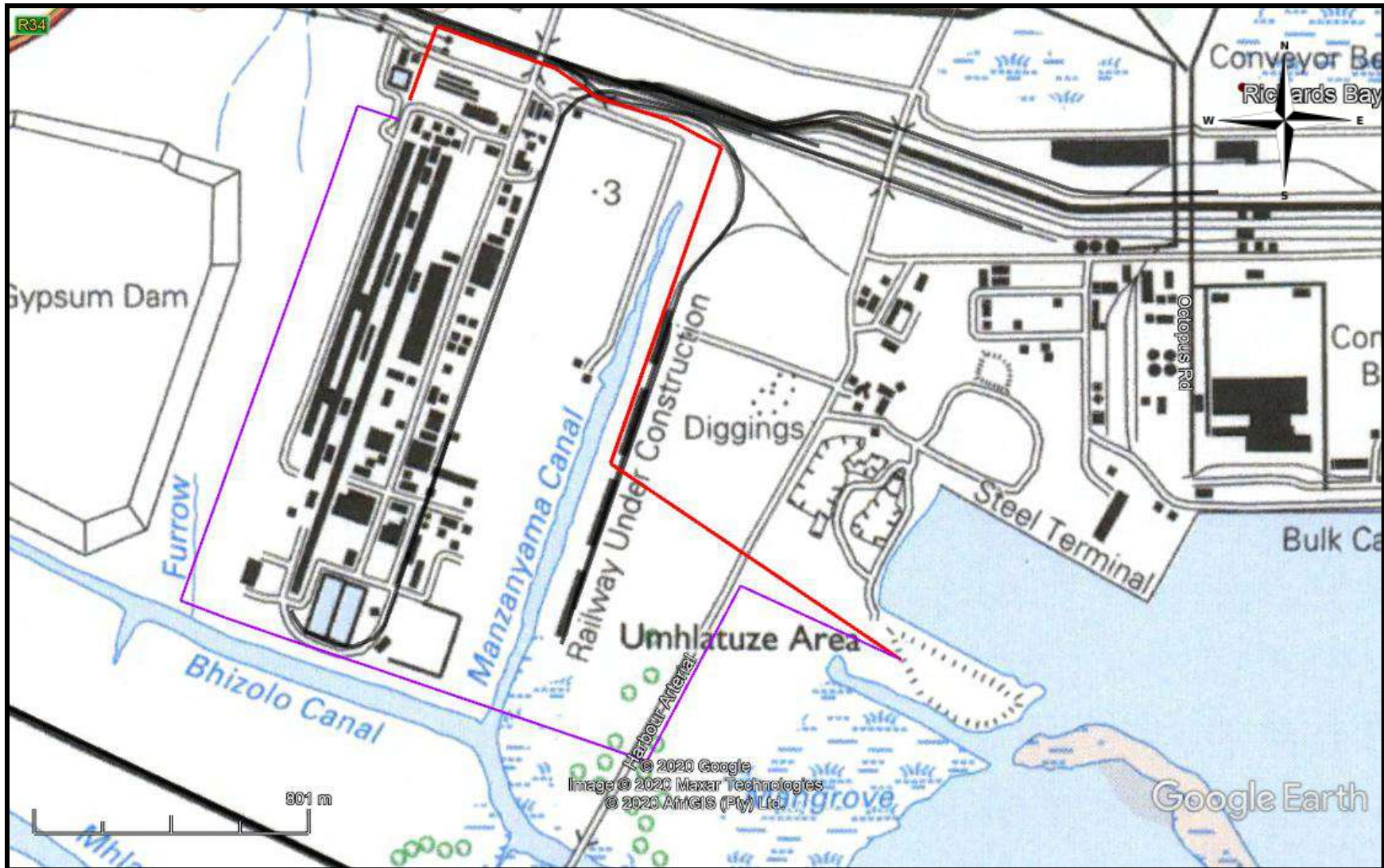
FIG. 1 GENERAL LOCATION OF THE PROPOSED DEVELOPMENT



FIG. 2: AERIAL OVERVIEW OF THE PROPOSED DEVELOPMENT



FIG. 3: TOPOGRAPHICAL MAP OF THE PROPOSED DEVELOPMENT (2002)





VIEWS ALONG THE PROPOSED (TOP) & ALTERNATIVE LINE



**KWAZULU NATAL AMAFA AND RESEARCH INSTITUTE, ACT 05, 2018**

“General protection: Structures.—

- No structure which is, or which may reasonably be expected to be older than 60 years, may be demolished, altered or added to without the prior written approval of the Council having been obtained on written application to the Council.
- Where the Council does not grant approval, the Council must consider special protection in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- The Council may, by notice in the *Gazette*, exempt—
- A defined geographical area; or
- defined categories of sites within a defined geographical area, from the provisions of subsection where the Council is satisfied that heritage resources falling in the defined geographical area or category have been identified and are adequately protected in terms of sections 38, 39, 40, 41 and 43 of Chapter 9.
- A notice referred to in subsection (2) may, by notice in the *Gazette*, be amended or withdrawn by the Council.

General protection: Graves of victims of conflict.—No person may damage, alter, exhume, or remove from its original position—

- the grave of a victim of conflict;
- a cemetery made up of such graves; or
- any part of a cemetery containing such graves, without the prior written approval of the Council having been obtained on written application to the Council.
- General protection: Traditional burial places.—
- No grave—
- not otherwise protected by this Act; and
- not located in a formal cemetery managed or administered by a local authority, may be damaged, altered, exhumed, removed from its original

position, or otherwise disturbed without the prior written approval of the Council having been obtained on written application to the Council.

The Council may only issue written approval once the Council is satisfied that—

- the applicant has made a concerted effort to consult with communities and individuals who by tradition may have an interest in the grave; and
- the applicant and the relevant communities or individuals have reached agreement regarding the grave.

General protection: Battlefield sites, archaeological sites, rock art sites, palaeontological sites, historic fortifications, meteorite or meteorite impact sites.—

- No person may destroy, damage, excavate, alter, write or draw upon, or otherwise disturb any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- Upon discovery of archaeological or palaeontological material or a meteorite by any person, all activity or operations in the general vicinity of such material or meteorite must cease forthwith and a person who made the discovery must submit a written report to the Council without delay.
- The Council may, after consultation with an owner or controlling authority, by way of written notice served on the owner or controlling authority, prohibit any activity considered by the Council to be inappropriate within 50 metres of a rock art site.
- No person may exhume, remove from its original position or otherwise disturb, damage, destroy, own or collect any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site without the prior written approval of the Council having been obtained on written application to the Council.
- No person may bring any equipment which assists in the detection of metals and archaeological and palaeontological objects and material, or

- excavation equipment onto any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, or meteorite impact site, or use similar detection or excavation equipment for the recovery of meteorites, without the prior written approval of the Council having been obtained on written application to the Council.
- The ownership of any object or material associated with any battlefield site, archaeological site, rock art site, palaeontological site, historic fortification, meteorite or meteorite impact site, on discovery, vest in the Provincial Government and the Council is regarded as the custodian on behalf of the Provincial Government.”

### **METHOD**

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. This databases contains archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (<http://www.vuvuzela.com/googleearth/monuments.html>) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1<sup>st</sup> and 2<sup>nd</sup> edition 1:50 000 topographical and 1937 aerial photographs where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where required we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

### **Defining significance**

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

#### **1. State of preservation of:**

- 1.1. Organic remains:
  - 1.1.1. Faunal
  - 1.1.2. Botanical
- 1.2. Rock art
- 1.3. Walling
- 1.4. Presence of a cultural deposit
- 1.5. Features:
  - 1.5.1. Ash Features
  - 1.5.2. Graves

- 1.5.3. Middens
- 1.5.4. Cattle byres
- 1.5.5. Bedding and ash complexes

**2. Spatial arrangements:**

- 2.1. Internal housing arrangements
- 2.2. Intra-site settlement patterns
- 2.3. Inter-site settlement patterns

**3. Features of the site:**

- 3.1. Are there any unusual, unique or rare artefacts or images at the site?
- 3.2. Is it a type site?
- 3.3. Does the site have a very good example of a specific time period, feature, or artefact?

**4. Research:**

- 4.1. Providing information on current research projects
- 4.2. Salvaging information for potential future research projects

**5. Inter- and intra-site variability**

- 5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?
- 5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

**6. Archaeological Experience:**

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

**7. Educational:**

- 7.1. Does the site have the potential to be used as an educational instrument?
- 7.2. Does the site have the potential to become a tourist attraction?
- 7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

## 8. Other Heritage Significance:

- 8.1. Palaeontological sites
- 8.2. Historical buildings
- 8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites
- 8.4. Graves and/or community cemeteries
- 8.5. Living Heritage Sites
- 8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts. Table 1 lists the grading system.

**TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES**

SITE SIGNIFICANCE	FIELD RATING	GRADE	RECOMMENDED MITIGATION
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	
High / Medium Significance	Generally Protected A		Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B		Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C		On-site sampling monitoring or no archaeological mitigation required prior to or during development / destruction

## **RESULTS**

### **DESKTOP STUDY**

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. Anderson and Anderson (2009, 2010a-b, 2015, 2004 – 2018, 2005 - 2014) have undertaken several surveys in the general area where a variety of sites have been recorded, sampled and excavated (fig. 5). These cover the Early, Middle and Late Stone Ages, Early and Late Iron Ages, Historical Period and the 20<sup>th</sup> century.

The 1937 map indicates that the study area was mostly used as agricultural fields surrounding wetlands where Alusaf currently occurs (fig. 6). Settlements and one cattle byre are visible on this map, but to the north of the study area. This is reiterated in the 1942 topographical map (fig. 7).

The 1964 topographical map (fig. 8) indicates that there is one settlement near the study area. Human graves would have been associated with this settlement. This has been now destroyed by the railway line.

The 1984 topographical map (fig. 9) shows the area as an industrial zone. These maps concur that there was a swamp and wetland formed by the Hlangabenzani River. However, by 1964 furrows/canals had drained much of the water.

The maps also indicate that much of the landscape has changed with the building of the harbour and extra docking areas. For example, the small peninsula where the powership will be anchored only occurs post-1983.



The historical maps thus indicate that human settlements did exist in the general area and thus there is a possibility for human graves.

This area has also been one of the many areas regarding forced removals of the Mandlazini people (Griffiths 1996; Ntuli 2019). There is still a land claim for the general area.

FIG. 4: LOCATION OF KNOWN HERITAGE SITES IN THE GENERAL AREA

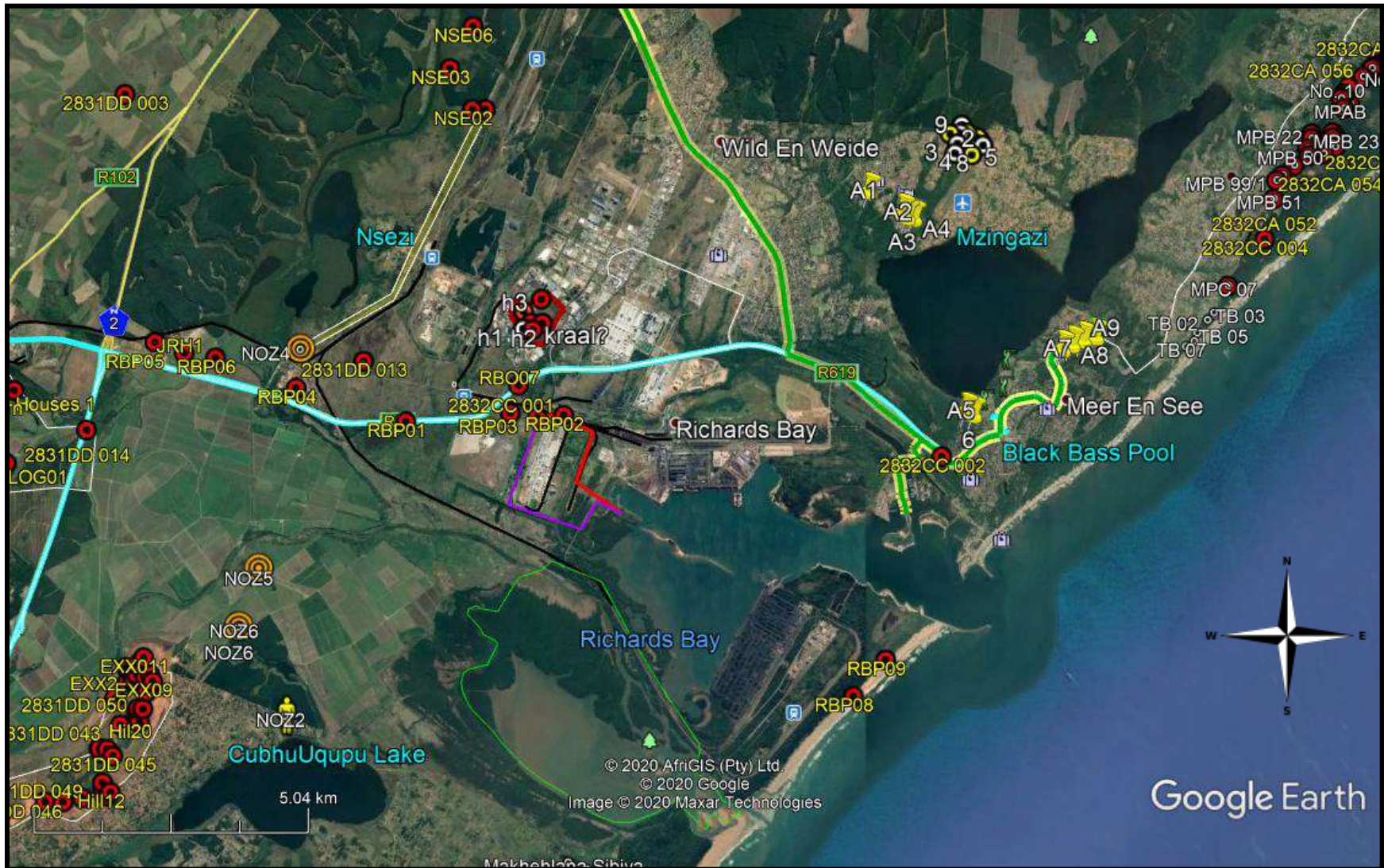


FIG. 5: LOCATION OF PROPOSED LINES IN 1937



FIG. 6: LOCATION OF PROPOSED LINES IN 1943

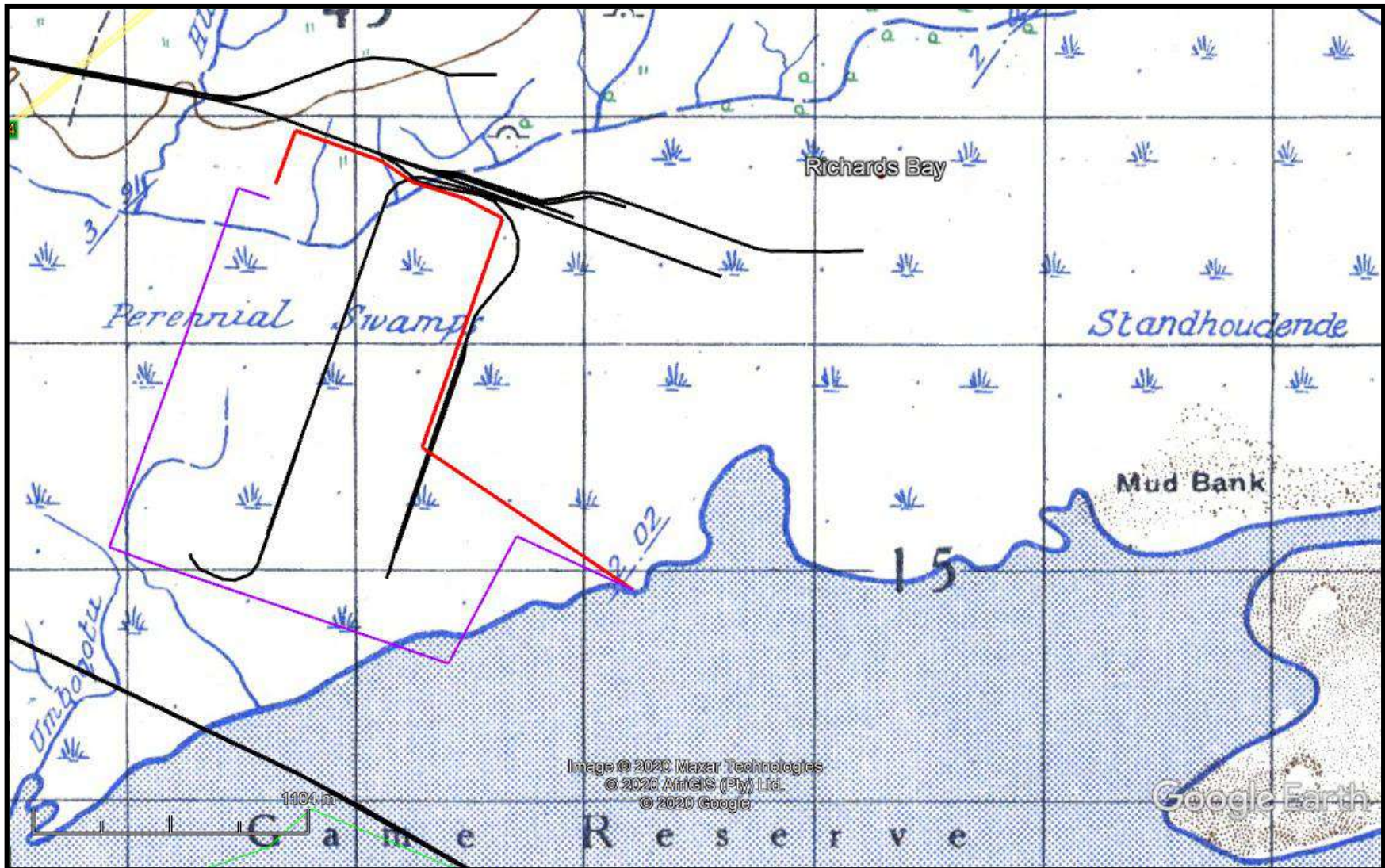


FIG. 7: LOCATION OF PROPOSED LINES IN 1964

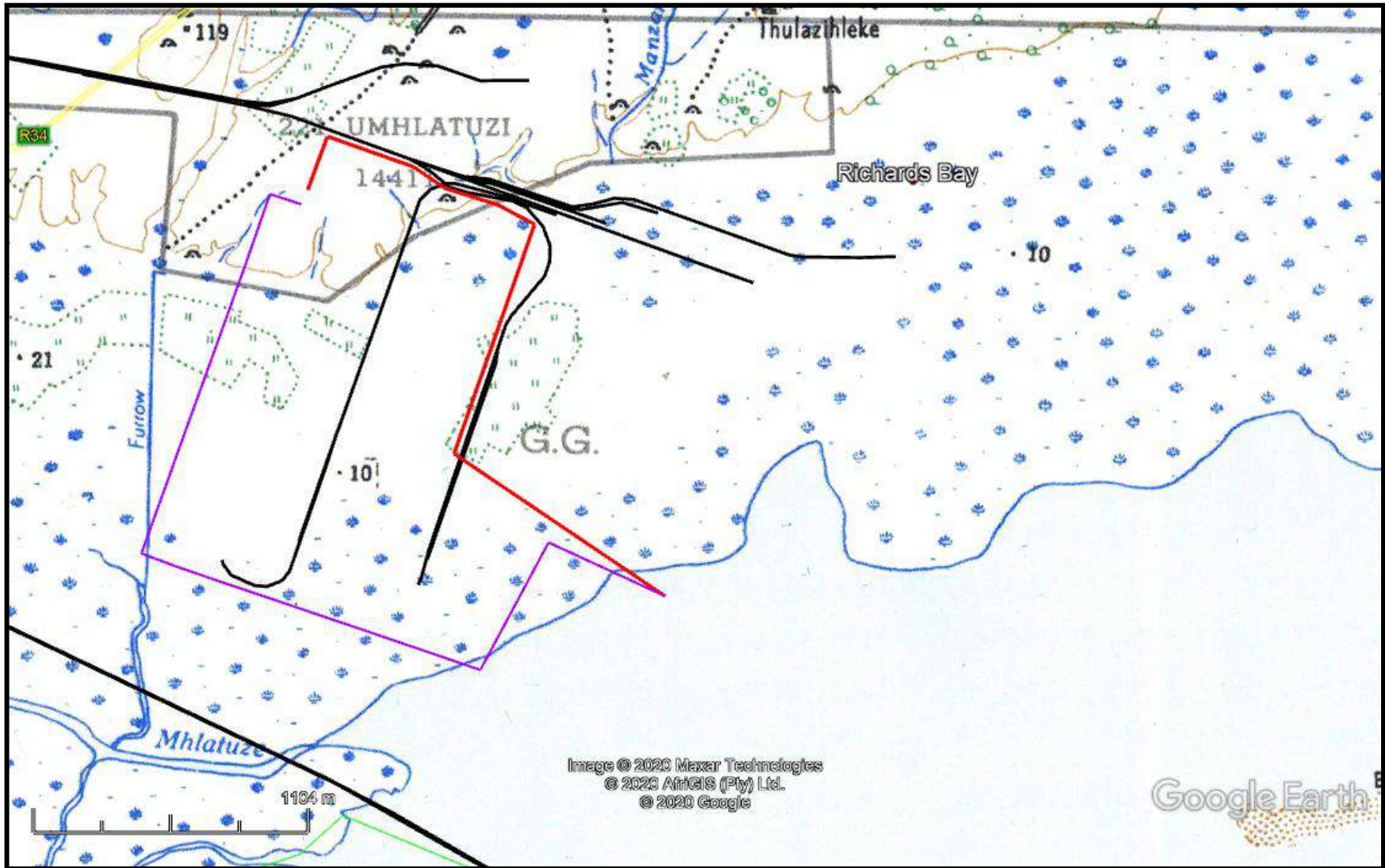
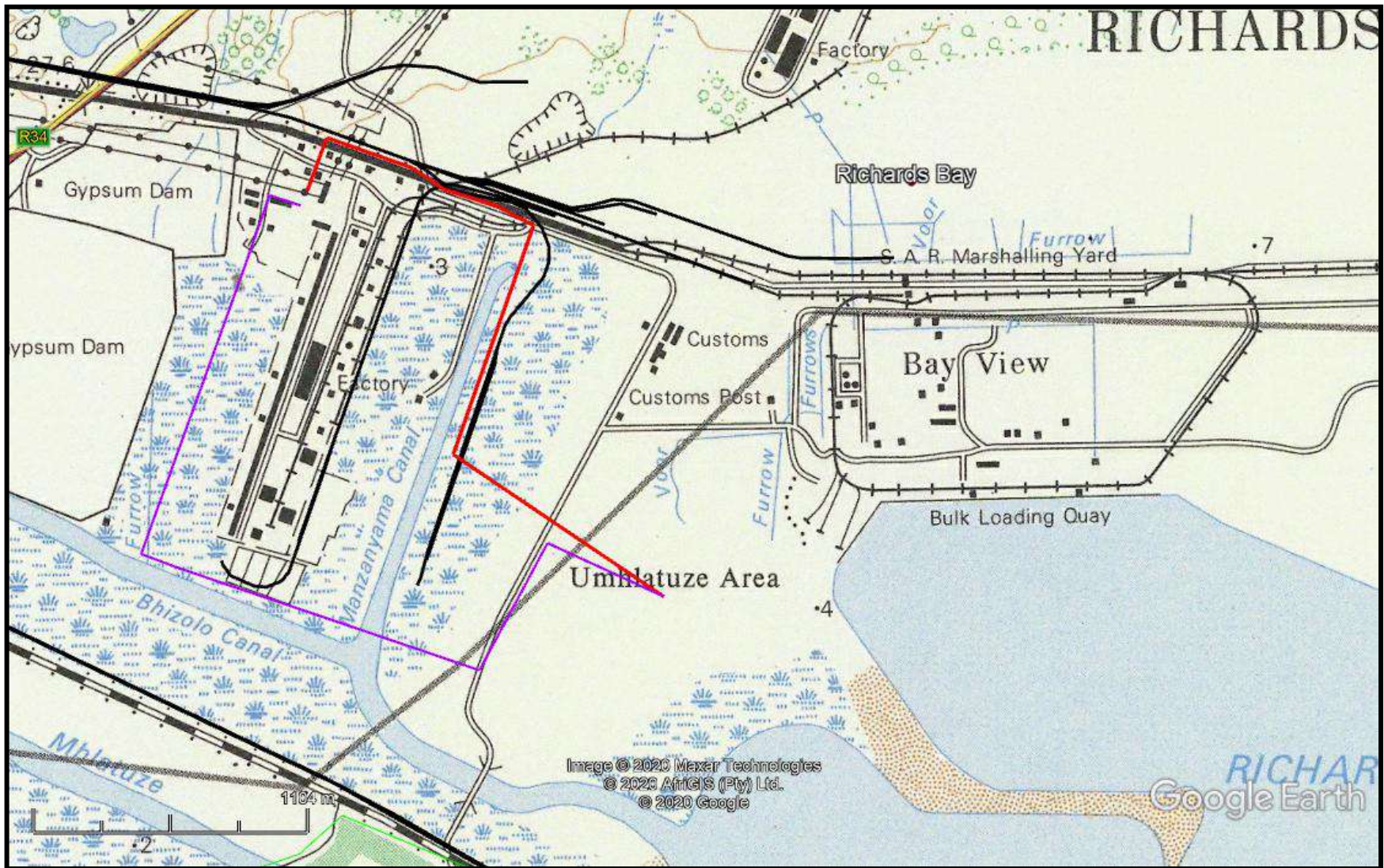


FIG. 8: LOCATION OF PROPOSED LINES IN 1983



## **PALAEONTOLOGICAL SENSITIVITY**

The area is in an area of low to medium palaeontological sensitivity (fig. 9). The green area refers to the Cretaceous deposits that occur 3m – 5m below the surface. These deposits were noted during the harbor expansion project. The proposed project will not reach those depths and it consists of small impact areas for each pole.

If any shell layers are affected during the course of construction, then the Eco needs to inform KZNARI immediately. This will not delay the construction since the material would already be exposed and on the surface. It will be merely to assess the deposits.

**FIG. 9: PALAEONTOLOGICAL SENSITIVITY MAP**



### **FIELD SURVEY**

A field survey was undertaken on the 15 September 2020. Most of the power line is in a swamp habitat. Only the area near Alusaf was on raised ground in the past, and this has been disturbed.

No heritage sites were noted along the route.

### **RECOMMENDATIONS**

In terms of the heritage aspect, either Route Option for the powerline is viable since no sites were recorded.

No heritage sites have been recorded in the study area. The project should be exempt from further HIA mitigation.

### **CONCLUSION**

A desktop heritage survey was undertaken for the proposed Richards Bay powership line. There will be a ~3km 132kV transmission line from the Richards Bay Port to the Bayside substation. This in turn will supply to the national grid.

The study area is mostly in (drained) swamps with a few raised areas. These areas were used in the past as agricultural fields.

No heritage sites were noted during the survey.



## **REFERENCES**

Anderson, G. and Anderson, L. 2009. Heritage Survey Of The Proposed Expansion To The Transnet National Ports Authority, Richards Bay. For MSA Environmental, Legal & Mining Services

Anderson, G. and Anderson, L. 2010a. Heritage Survey Of The Proposed Richards Bay Central Industrial Area. For Coastal & Environmental Services

Anderson, G. and Anderson, L. 2010b. Heritage Survey Of The Nozelela Minerals Sands (Pty) Ltd 33kv Transmission Line. For SRK Consulting

Anderson, G. and Anderson, L. 2015. Alton South Transnet Railway, Richards Bay, KwaZulu-Natal For Exigent Environmental

Anderson, G. and Anderson, L. 2004 – 2018. Annual Report For Archaeological Surveys Of The Zulti North Mining Lease. Report For RBM

Anderson, G. and Anderson, L. 2004 – 2015. Annual reports for Hillendale Mine. Tronox KZN Sands.

Anderson, G. 2020. Heritage Survey Of The Proposed 3140mw Combined Cycle Power Plant (Ccpp) Power Project At Erf 1854 Alton, Richards Bay, KwaZulu-Natal. For Exigent Engineering

Griffiths, S, 1996. Competition for Land between Conservation and Low Income Settlement Users: The Classical Case of Reserve 6 in Richards Bay., Master's Thesis: University Of Natal

Ntuli, H.S. 2019. Memories Of Victims: The Historical Trajectory Of The Removal Of People From Mandlanzini, South Africa. *Southern Journal For Contemporary History***44 (2):**74-95

### **EXPERIENCE OF THE HERITAGE CONSULTANT**

Gavin Anderson has a M. Phil (in archaeology and social psychology) degree from the University of Cape Town. Gavin has been working as a professional archaeologist and heritage impact assessor since 1995. He joined the Association of Professional Archaeologists of Southern Africa in 1998 when it was formed. Gavin is rated as a Principle Investigator with expertise status in Rock Art, Stone Age and Iron Age studies. In addition to this, he was worked on both West and East Coast shell middens, Anglo-Boer War sites, and Historical Period sites.

### **DECLARATION OF INDEPENDENCE**

I, Gavin Anderson, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.

A handwritten signature in black ink, appearing to read 'Gavin Anderson', with a horizontal line underneath.

Gavin Anderson  
Archaeologist/Heritage Impact Assessor